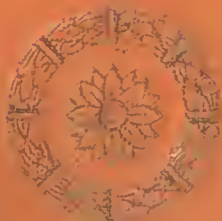


RINGWORM

TILBURY FOX



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ON RINGWORM

AND ITS MANAGEMENT.

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AND ITS MANAGEMENT.

BY

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P R E F A C E.

I WROTE the substance of this little book a year or two ago, and used it as the basis of some of my Lectures at University College Hospital. It recently appeared in the columns of the *Lancet*, in a series of short papers. I have now reprinted these papers in this convenient form, and with certain additions, in the belief that they may be of service to many of my professional *confrères*.

My brother, Mr. Thomas C. Fox, has been kind enough to relieve me of the trouble of revision during the passage of the book through the press.

14, HARLEY STREET, W.

January, 1878.



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ON RINGWORM

AND ITS MANAGEMENT.

CHAPTER I.

INTRODUCTORY OBSERVATIONS.

IT is beyond question that the results of the treatment of ringworm of the head are, in the majority of cases, eminently unsatisfactory and disappointing. There are, no doubt, certain special difficulties which stand in the way of a rapid cure of the disease in most instances. But, making due allowance for this fact, the truth of the assertion I have made must be admitted, especially when it is remembered that the disease is of the commonest occurrence, and therefore that abundant opportunity is afforded for its study; that its proximate cause is well understood; that the essential diseased condition is readily accessible to remedies; and lastly, that both medical men and those who have charge of ringworm patients are always anxious to get rid of such a potent source of evil, if only on account of the serious consequences of the necessary isolation of

the infected demanded by the contagiousness of the disease.

FAULTS IN TREATMENT.—During the last twenty years my attention has been specially directed to the subject of ringworm, and special circumstances have concurred to afford me an unusual amount of clinical experience of the disease, both in private and public practice. I think, therefore, that I may speak with authority concerning the errors that are usually made and the difficulties encountered, not only in the recognition but the treatment of the malady.

The faults of the existing defective management of ringworm lie in part at the door of the practitioner, and in part at that of the persons who are immediately in charge of ringworm cases, and who fail to effectually carry out the directions of the practitioner. I propose to point out, as briefly as I can, what these faults are, and then to offer some practical observations relative to the diagnosis and treatment of the disease under notice, which may prove of service to my medical confrères.

A. In the *first* place, one of the causes of the common occurrence of failure in satisfactorily treating ringworm cases is unquestionably the existence on the part of most practitioners of a feeling of dislike to have any dealings with them. The prevalence of such a feeling is incompatible with that careful examination of cases of disease and that

thoroughness and determination in the use of remedies without which treatment is a failure. In my own opinion, the exercise of a little more trouble and patience would remove the obstacles which commonly stand in the way of the successful management of ringworm of the head in the majority of cases, and would reduce the number of obstinate and rebellious instances of the complaint to an inconsiderable minority. The practitioner must necessarily expect to have his patience tried by the difficulty of getting his directions fully and fairly carried out, and against this he must make due provision.

B. In the *second* place, the treatment usually adopted for the cure of ringworm is based upon an imperfect conception of the mischief to be remedied. Ringworm is a disease due to the growth of a vegetable fungus which insinuates itself about and amongst the shaft and fibres of the hair and the epithelial tissues. It is obstinate when the scalp is the seat of disease, from the fact that the parasite effects a lodgment in the deepest part of the hair follicle, and is out of the ready reach of remedies capable of destroying it. The treatment usually employed does not seem to be based upon a sufficient appreciation of this fact. Too much attention is paid to the mere surface changes in ringworm, and decidedly too little stress is laid upon the fact that the difficulty of curing the disease depends essentially

upon the existence of the fungus and *its active growth at the deepest part of the hair follicle, where it lies ensconced out of the easy reach of parasiticides*; its growth being, however, favoured more or less by certain general nutritive conditions. I do not mean to say that practitioners affirm the *superficiality* of the disease in so many words, but I do mean to aver that the treatment adopted suggests that they are unconsciously or seemingly actuated by such a belief. The real object to be kept in view is the removal of the diseased hairs and the fungus in and about them; but attention is too much directed to the state of the scalp itself. Mere eruption, and its degree and results, are of little moment in a therapeutic point of view, except in so far as they are caused by the application of irritants, in which case they are a guide to the extent to and frequency with which the latter may be conveniently repeated.

It cannot be too strongly insisted that, from the moment a case of ringworm comes under observation until the time that it can with certainty be pronounced well, the condition of the hairs is the chief thing to which the attention of the practitioner should be directed. The only safe guide to prognosis and to a proper estimate of the progress of the disease towards cure, is to be obtained by observation of the state of the hairs of the diseased part. I lay so much stress upon this point because so many fail to recognise its importance, especially in regard to

prognosis. I can truthfully say scarcely a week passes but I see cases of ringworm pronounced well because there is no apparent scaliness, and the hair *appears* to be growing fairly well again on the site of the previously diseased places, when all the while there are characteristically diseased hairs intermingled with, but perhaps concealed by, healthy ones, or studding over the supposed recovered spot. The recognition of these morbidly altered hairs is not an easy matter in some instances, particularly in light-haired children. It is often necessary to search carefully for them with a good lens and plenty of light, precautions frequently neglected, but only to result in a serious mistake in prognosis or diagnosis being made. Of course, those who do not possess good eyesight, or who discard the aid of a lens, wholly overlook the condition.

c. In the *third* place, in diagnosing ringworm, it is needful to guard against the error, which is often committed, of considering that there is a general uniformity in its naked-eye features; that, for instance, the diseased surface is always circular in form and scurfy, &c. As I shall point out further on, the disease is not always composed of "rings," but varies greatly in its clinical aspects. But it is important to know that, however much different cases of ringworm may vary in aspect, although the circular character of patches may be entirely absent, yet, one feature of the disease is always to be recog-

nised, and that consists in diseased hairs, which may of course be few or many in number.

D. In the *fourth* place, in dealing with the treatment of the disease in detail, it is of the utmost consequence to recognise and act upon the fact that the disease, as I have already hinted, varies vastly in the degree of its hold upon the surface, according to the state of health of the attacked subject. General treatment may not be needed in some cases, but it is essential to the cure of the disease in others, and must be formulated in accord with several important considerations. The want of attention to this point greatly encourages blind faith in specifics. If it be neglected, of course, the differences in the characters of different cases remain unrecognised, and, consequently, all cases are treated alike. This topic will be duly noticed.

E. In the *fifth* place, the directions given to those who are entrusted with the care of ringworm cases are often not sufficiently explicit and urgent. Proper directions must come from the prescriber. If the medical practitioner is himself not duly impressed with the necessity of unusual precautions and perseverance in the vigorous treatment of the disease, it is not to be expected that the attendant will appreciate the fact. What is needed is that the mother or nurse in charge of the affected child should be impressed by the practitioner with the conviction that the real difficulty in curing the disease is,

getting the remedies by due friction to be brought fully into action upon the fungus at the deepest part of the follicle, or the root of the hair, and that this difficulty can only be overcome by constant, continuous, and free application, or infriktion of remedies, after all hair-crusts and other obstacles about the scalp have been carefully removed. Unless this is effected, attendants are satisfied with a mere superficial application of remedies. It is not an easy matter to instil this conviction into the minds of attendants, and if in the management of ringworm some blame attaches to the doctor for a due want of appreciation of the point under notice, much more lies at the door of parents and others who are called upon to use the measures prescribed for the cure. Children with ringworm are not ill, and consequently many parents cannot understand the necessity for the constant supervision of cases by the medical men, and they use their own judgment in the matter, even when pains are taken to explain to them the natural difficulties which delay the cure of ringworm. Moreover, the love of quackery and of specifics is so very strong amongst the public that, unless the progress is *what they themselves decide is proper*, they are apt to chop and change about from remedy to remedy upon the recommendation of almost any one, provided he or she be not medical.

It is further assumed that ringworm must be the same in all cases, and what will cure one case should

be equally efficacious in another, whereas variations in the state of the general health greatly modify the intensity of the disease in different instances.

There are other minor difficulties against which the medical man has to contend, and chief amongst these must be mentioned the desire of parents to retain the hair of children, and their opposition to its removal, which is often really necessary for the ascertainment of the actual amount of disease present, and the prevention of its spread to new points. A great number of cases lapse into a chronic state on account of a want of care in these points. On account of the frequent obstinacy of the disease, the very serious inconvenience and loss of educational advantages contingent upon the banishment of the infected from schools, the pecuniary loss to those who are concerned in education by the breaking out of the pest of ringworm in school, and the consequent paramount importance of checking the disease as speedily as possible, in view of its probable dissemination among the healthy in families, schools, and institutions where the young are congregated, it is imperative that close attention should be given to the lesser as well as the greater matters of therapeutic detail. In regard to no other disease can it be said that it is more needful that the treatment should be conducted with great definiteness and decision, and to that end the preceding general observations, no less than those which follow, I hope may tend.

CHAPTER II.

GENERAL DESCRIPTION OF RINGWORM.

THE term "ringworm" is used by most modern writers as a generic designation for the group of diseases caused by the attack upon the skin of vegetable parasites; but popularly it means the common ringworm of schools, which attacks the scalp and the body, and in that sense I employ it in the succeeding remarks. This common ringworm of the head, or *tinea tonsurans*, and of the body, *tinea circinata*, is caused by the attack of a vegetable called *trichophyton tonsurans*. The disease is essentially contagious, the contagious element being the fungus.

Ringworm of the Head attacks children, except in rare instances. It is said not to occur in the adult, but this is a mistake. I have seen even severe cases in adults of from twenty-one to forty years of age.

Ringworm of the Body, which occurs in the form of red scurfy rings, is observed in persons of all ages, but it is more common in the young. The difference in aspect, as compared with ringworm of the scalp, is due to the absence of hair in the one locality and its

presence in the other. In hot climates—India, China, South America, &c.—under the influence of heat and moisture, the fungus grows very luxuriantly, and the disease is much more severe and extensive, covering large portions or whole regions of the body, in the form of large, well-defined, bright-red, scurfy, itchy, and even infiltrated patches or rings, but I do not purpose to deal with this tropical phase of the disease here.

The fungus (the *trichophyton tonsurans*), which is figured at pp. 20, 22, occurs in varying luxuriance. Its rate and power of persistent growth, its rapidity of reproduction, and the special aptitude which it exhibits for certain surfaces, are very different in different instances. Sometimes its growth is very feeble, and it is easily destroyed, and *vice versâ*. The differences in these respects are to be accounted for, not only by the more favourable *nidus* which it meets in some as compared with other persons, but also by the favourable concurrence of external conditions, such as the presence of heat and moisture, as in tropical parts; and likewise anatomical considerations, since in the more hairy parts the fungus, with its predilection for the hair structure as its seat of growth, penetrates more deeply in such localities to the bottom of the follicle, and there nestles out of the reach of agencies that destroy it. In non-hairy parts it is more liable to be killed.

When the fungus effects a lodgment upon the surface it acts in several ways: firstly, as an irritant, causing a certain amount of inflammation, with attendant redness and effusion, and subsequently desquamation; secondly, it appropriates the moisture, and probably the nutrient material of the hair in hairy parts, and so alters the hairs texturally, rendering them dry, lustreless, and brittle, and subsequently in chronic cases, fatty; whilst the mere force of its growth and increase in bulk splits up the hair shaft, and otherwise disorganises its tissues, which it invades; and, thirdly, it destroys and prevents the formation of the root sheaths, and leads to the blockage of the follicles by débris. In non-hairy parts it invades and inflames the epithelial tissues more especially, and the circularity of the tinea patch is due to the fact that the fungus grows and irritates equally in all directions from a common centre.

PRACTICAL APPLICATION.—From a consideration of this brief general outline of the nature of ringworm it will be evident that there are three main elements or conditions of which ringworm is composed.

1. The state of health or nutrition which supplies the *nidus* for, or favours, the growth of the fungus, or, in other words, a suitable SOIL.
2. The fungus or PARASITE itself.
3. The effects produced upon the tissues by the growth of the parasite.

It is important to bear in mind this composite character of ringworm, for the successful treatment of the disease depends in great measure thereon. Ringworm is obstinate in proportion as this or that patient offers a favourable soil in his textures for the growth of the fungus or parasite. The skin absorbs sluggishly and scantily even with considerable friction, especially at a diseased site, in ringworm, and in all cases where the mischief has fully established itself in the skin the difficulty of getting parasiticides into contact with the fungus or parasitic elements at the deeper parts of the hair-follicle—and it must be recollected that this reaches to a point below the true skin—is not slight. If the fungus grows languidly—which implies only a slightly favourable soil—it will be the more readily destroyed; but if it grows luxuriantly, it will do this in proportion as the general nutritive condition furnishes a favourable *nidus*—it will be more difficult, because in reality the rate of growth and increase of the fungus may exceed the degree of destructiveness of the inflected remedy, unless special provision is made that this shall not be the case by general internal measures, as well as greater vigour in the use of local means. In the case of the application of potent remedies, such as blistering fluids, it must be remembered that the parasiticial operation of the drug does not extend in many cases so deeply as the deepest part of the follicle, and other measures of internal operation are

needed to help to starve out the fungus. The curability of ringworm, therefore, is effected not only by the adoption of all that tends to increase the absorption of parasite-killers, but also such general remedies as are calculated to alter the state of nutrition which furnishes the favourable seed-ground for the ringworm growth.

CHAPTER III.

DETAILED DESCRIPTION OF RINGWORM.

IN this section I take up in detail the clinical description of the three conditions which, from a therapeutic point of view, constitute ringworm—namely, (*a*) the constitutional state or soil which is favourable to the growth of the parasitic fungus; (*b*) the parasite; and (*c*) the effects produced by the fungus in its attack upon the tissues.

I. THE SOIL, OR HEALTH STATE, OR CONSTITUTIONAL CONDITION.

It has been said by those who have had very extensive experience of the disease that the total or sole cause of ringworm is some internal derangement of the nutritive or some other function. The late Mr. Hunt affirmed this in the most precise terms, and declared that the presence of the fungus was entirely a secondary matter—*i.e.*, a strictly superadded and accidental phenomenon. Mr. Erasmus Wilson does not regard the disease as a parasitic one, but as consisting in a depraved state of nutrition of the affected part, the so-called fungus or parasite being only a degenerate condition of the epithelial tissues, the consequence of imperfect nutrition. In this point of

view the state of the general health is, of course, alone of importance, and the disease is to be cured mainly by good living in its widest sense, fresh air, and suitable tonics. Accordingly Mr. Hunt relied mainly upon a liberal allowance of meat, puddings, bread and cheese, milk, change of air, and steel and arsenic for boys and girls suffering from ringworm, regarding them as "underfed." I need not enter into any argumentative examination of this point, but content myself by observing that whilst I fully admit that a most important part is played by the general health condition in ringworm, an equally active part must be assigned to the fungus. The arguments in favour of the assertion that the growth of the parasite is the essential cause of the inflammatory symptoms and the disorganised state of the hairs in ringworm are unanswerable. I will mention but one or two. No such textural alteration as is present in the hairs in ringworm is ever produced except by the attack of the fungus upon them; with the destruction of the fungus the disease at once ceases; parasitocides, if they reach the fungus, speedily cure the disease; and, lastly, the fungus can be shown to be a vegetable structure by artificial cultivation, which is impossible in the case of degenerate animal structure; and by chemical manipulation.

Whilst it is impossible at present to define with any approach to *scientific exactness* the nutrition-state which is favourable to the growth of the vegetable

parasite, there is little difficulty in stating in what kind of individuals it is to be found—viz., in children of a strumous and lymphatic diathesis, and especially such as are the subjects of malassimilation, who have been underfed or have not been under proper hygienic influences of a general character. As regards age, it does certainly appear that about the time of puberty some change takes place in the nutrition of the textures which lessens or destroys their suitability as the seat for fungus growth; and in keeping with this phenomenon it is a noteworthy fact that in boys and girls nearing this time of life, ringworm is more manageable, and where ringworm has existed as a chronic disease for several years, it tends to lose its virulency and to spontaneously get well as this age is approached.

The most obstinate cases I have seen have been in excitable or sensitive children of well-to-do and even aristocratic people, of decidedly strumous diathesis, the children presenting decided evidences of struma themselves, such as bone or ear mischief, whilst some of their brothers and sisters have exhibited similar conditions, the actually infected children being themselves pale, delicate, with oftentimes a peculiar leaden hue about the eyes, in conjunction with a weak circulation, capricious appetite, torpid liver, white stools, and the like. In the subjects of spinal disease ringworm is severe. It is a fact also worthy of notice here that if ringworm is very severe and obstinate in

one, it will exhibit a like disposition in other members of the same family, showing that it is in a general rather than any mere local condition that the circumstances favouring the growth of the parasite are to be discovered.

In children not actually strumous, but in the thin, pallid, delicate, and vivacious little ones, of true phthysical tendency or weakly parentage, the same obtains. It is not only that such children are weak, but they in some special manner, like the really strumous, furnish some nutritive condition which renders them prone to severe and obstinate ringworm. In all such cases as the above-mentioned the indications as to general treatment are clear enough. Children must be placed under the influence of the best possible hygienic and tonic measures; but it is important to attend to *special* conditions in this respect—for example, overwork, late hours, too much confinement in the schoolroom, and the like.

But there is a more particular condition in a large number of children attacked by ringworm, be they strumous or not, to which I have on many occasions called attention, and that is the avoidance of fat of all kinds in the diet. Mothers and nurses, in answer to inquiries on this point, almost invariably reply at once that this or that child “never takes fat,” “dislikes all fat,” and so on. I know that it may be said, that most young children between four and seven or

eight, show a natural dislike to fat; but in children affected by ringworm, avoidance of this article of diet is specially marked. I am sure that the avoidance of fatty matter in diet, or its non-assimilation in the form of milk, fat of meat of all kinds, and the like, has a potent influence in leading to the development of a condition of nutrition which is favourable to the occurrence of obstinate ringworm.

In the treatment of ringworm, whilst I lay much stress on the prescription of suitable medicinal remedies in particular cases, I insist very strongly upon the use of cod-liver oil, with as much other fatty matter in the diet as the child can take. In many cases this alteration of diet is at once followed by an improvement in the character of the disease.

There are no doubt apparent exceptions to the rule above stated, but in such cases it will often be discovered that although fat in moderation may be taken, it is not assimilated; and this leads me to remark that when fatty matter is prescribed by the physician, even where it can be borne, which is sometimes the case, it may fail to do good for the same reason. Special attention must then be paid to the intimate digestive operations within. There are few medical practitioners who could not recall at once to memory the cases of certain children who have given them infinite trouble, and who, although not markedly phthisical or strumous in diathesis, were weak, pallid, undergrown, semi-feverish, and described by their

parents as "unsatisfactory doers," not "doing justice to their food," &c., who have eaten fairly and even well, but without the expected results, and who are readily upset by little errors or excesses of diet, who, without perhaps any want of care or error of diet, lose ground gradually for a time, until some accidental or happy change to the country or seaside picks them up again for a while. On inquiry, it was found that the breath was foul, the tongue dirty, the child flushed and uncomfortable after eating, and restless at night; that the urine was scanty and loaded, the bowels uncertain, and the stools white, as a rule, or clay-coloured and messy. In such cases assimilation is imperfect, and it is useless to expect good from tonics and cod-liver oil until the digestive functions have been set in order. What is needed is the prescription of active cholagogues, with full doses of mineral acids, taraxacum, chlorate of potash, and nuxvomica; some or more of these in combination for a while. It is to be regretted that so little attention is paid to this point.

II. THE PARASITIC FUNGUS :—

I shall only deal with the fungus here with the view of pointing out how it may ordinarily and most readily be recognised, and for what it is liable to be mistaken in microscopical examination.

The fungus, the *trichophyton tonsurans*, is made up of *conidia* (Fig. 1), or reproductive bodies, and *mycelium* (Fig. 2). Attention need only be directed to

the former for purposes of diagnosis and prognosis. An estimate of the progress of the disease is made,

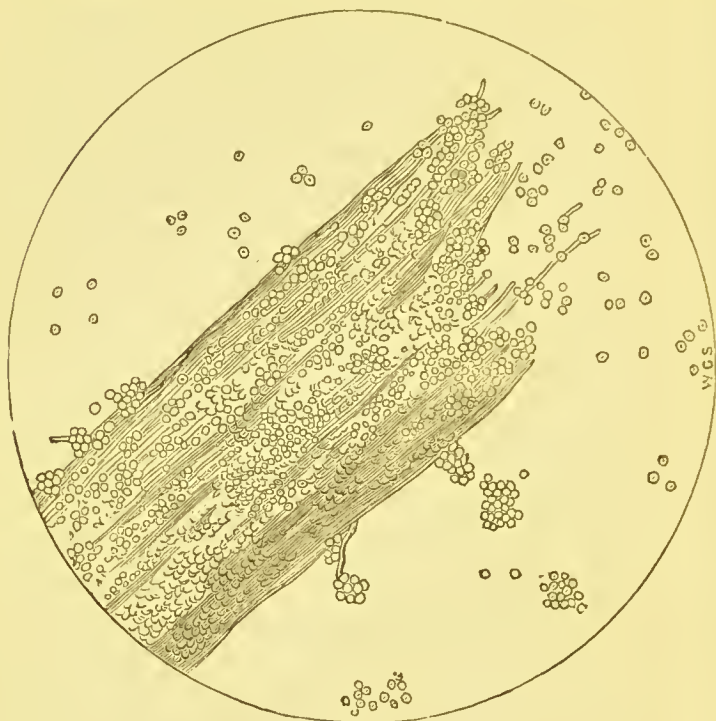


FIG. 1.

so far as microscopical examination is concerned, by ascertaining the presence and amount and distribution of the conidia.

The conidia, or *spores*, as they have been usually called (see figure 1), are readily recognized in properly prepared specimens as bright, round, nucleated, clearly defined cellular bodies of nearly uniform size (about $\frac{1}{7000}$ to $\frac{1}{5000}$ of an inch in diameter), collected together in chains or groups, a few being separate

and scattered in and around the hair and epithelial structures. To see these conidia well, a small portion of diseased hair should be taken and, if possible, gently broken up in its dry state. It should then be well soaked in weak liquor potassæ and not be manipulated much. The presence of conidia, although existing in abundance, may readily be overlooked if the part under examination be not sufficiently thin, and the fibrous portion of the hair be so softened and separated out that light can readily penetrate it ; or if from much manipulation one layer be carelessly rolled freely over another.

These conidia may, by a careless observer, be easily mistaken for fat-globules, or rather the latter may be mistaken for the former, especially in chronic cases, where the hair textures themselves are undergoing fatty degeneration, and the fatty particles sometimes lie in apparent lines between the fibres of the hair, and so look like mycelial threads. To a practised eye the uniformity of the size of conidia, their nuclear contents, double contoured outline, highly refractive character, their tendency to bud, and their non-alteration by ether, are distinctive features. In cases where the amount of fungus is small, as when the disease is getting rapidly well, extra care must be paid to the directions just given for the detection of the fungus.

In the case of ringworm of the body, mycelium is present in greater amount than the conidia, and it is

important that very thin layers of tissue should be taken for examination, and that these should be well soaked in weak potash solution, and carefully flattened out without any rougher manipulation. The mycelium is readily recognised by the double contour of the elongated cells, the jointings, the nucleated contents, and the freedom of change under the influence of reagents.

The accompanying figure exhibits mycelium as seen ramifying through the broken-up fibres of a portion of hair.

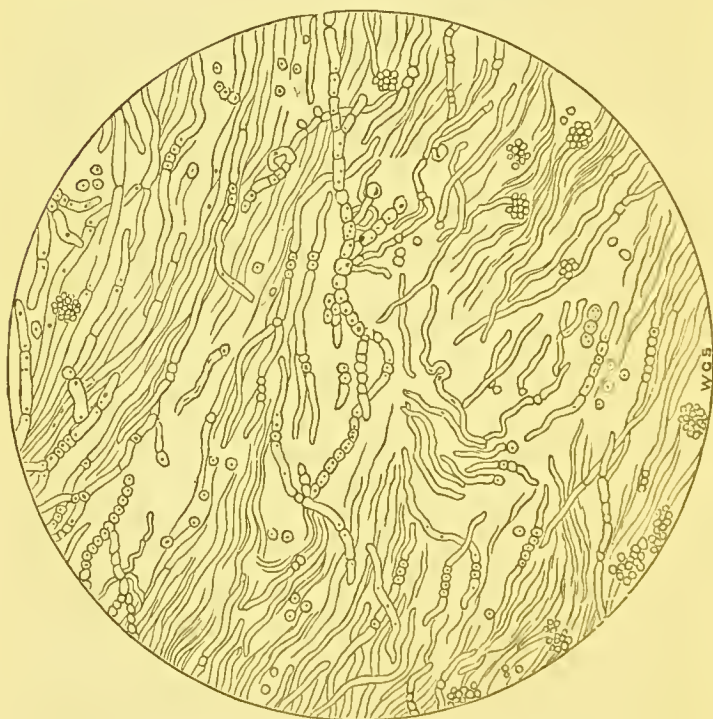


FIG. 2.

III. THE EFFECTS OF THE GROWTH OF THE FUNGUS ; OR, THE NAKED-EYE CHARACTERS OF RINGWORM OF THE HEAD.

The accounts generally given of ringworm in books, are calculated to convey to the reader the impression that the disease presents a uniform appearance, but such is far from being the case in reality. I will therefore first describe the typical form of the disease, and then deal with its modified aspects.

Typical ringworm, or the commonest form, consists of one or more roundish areas of disease on the scalp, particularly about the top of the head, the surface of which is sometimes slightly reddened, but at all events duller in hue than the healthy part of the scalp, slightly elevated, and the seat of desquamation, composed of dry, fine, whitish scales. These scales in many cases fringe the orifices of the follicles converging around the hair-shaft in a peculiar manner, and give a peculiar shining aspect to the patch. The hairs over the affected spot or spots appear as if "nibbled" off close to the scalp, the short portions that remain looking dry and bent, or twisted. On closer inspection with a lens, they are observed to be lustreless, more or less swollen or bulged here and there, and, on pulling at them, they are found to be quite brittle. They may be surrounded with a white pulverulent matter, which is a compound of epithelial débris and fungus. In dark-haired subjects the hairs may be duller and darker at first, but they subsequently

oftentimes become much lighter; in fair-haired children the hairs assume a faintly greyish or whitish aspect, and look very dry. If an attempt is made to extract diseased hairs they break away, and the point of snapping looks ragged and perhaps swollen; very rarely the whole hair with its inner root-sheath may come away, and less rarely the hair, with a destroyed or atrophied or "pegged" root, without any root-sheath attached. Under the microscope the fibrous part of the hair is seen to be split up and disorganised by the invading fungus, until sometimes very little of the original structure remains. The characteristic naked-eye condition is the presence of scaly circular patches with the apparently nibbled-off hairs, the remnants of which are bent and twisted just above the point of their emergence from the follicle. The patches are well defined and are attended with more or less itching.

A consultant sees, as I have said, many deviations—I do not mean varieties—from the above standard or typical form of ringworm, and to these I will now briefly refer. It may be that at the outset of these deviated phases the typical characters were assumed, but subsequently and clinically—that is to say, in cases that come for the first time under the observation of the physician—the characters are non-typical, and such as I shall depict; and these several different aspects of ringworm offer sufficient variation to deserve, for purposes of diagnosis and even of treatment,

separate notice. These variations belong respectively to recent and chronic cases.

Variation 1.—When ringworm is seen at its very earliest stage, it may be that no short broken-off hairs are present, or perhaps only one or two here and there, the presence of which may be easily overlooked; the patch only looks a little scaly, and it is taken to be a case of dry eczema or dandriff (seborrhœa). Sufficient time has not elapsed for the fungus to have worked its usual results on the hair. In light-haired children the mischief in such cases consists of small circular scurfy places covered by a few fine lamellar scales, or almost thin crusts of yellowish hue, varying in size from a pin's head to a threepenny-piece. Sometimes there is a small circumferential zone of redness about the spots, and then the characters of ordinary ringworm of the surface are approached or actually assumed. The redness is due to the irritation set up by the growing fungus, and the disease may be considered herpetiform in character. In fact there are transition stages between the smallest point and typical *tinea circinata* (or body ringworm). These spots speedily develop into the typical form of disease, and diseased hairs presently show themselves. Meanwhile the microscope detects the fungus in the scrapings from their surface. Now this state of things is met with in previously non-affected children as the first sign of disease, or it is observed in the scalp of children who have typical

ringworm already, and then indicates that fresh developments of the disease have occurred through fresh sowings of the fungus here and there; and usually there are many places. Hence it implies neglect of due precaution in this respect. This condition should be most carefully watched for and recognized as early as possible in children in both cases, and especially in schools where the disease is epidemic, for the sufficient reason that, if recognized early, as the mischief is superficial, it can be readily checked by appropriate remedies. But this form of ringworm is constantly overlooked, because it is not typical in its characters, and I lay so much stress upon its diagnosis for this very reason. Cases of the kind are constantly brought under the notice of medical practitioners, who pooh-pooh the idea of their being ringworm; and I subsequently see the cases and am told that the doctor said there was "only a little scurfiness," but only to find that certain of the places have since developed into the typical disease. It ought to be a rule to regard all instances of small areas of "localised scurfiness," especially in members of a family in which ringworm prevails, or has prevailed, as probably the same disease in an early or ill-developed stage, and the most attentive examination should be made for fungus elements or traces of diseased hairs. The disease liable to present the aspect of ringworm is seborrhœa, but there is one feature of this disease which is differential in its sig-

nificance, and that is the more general implication of the scalp as a whole, whereas in ringworm it is simply a point or a small patch here and there that is affected, the immediately adjoining part of the scalp and the scalp as a whole being perfectly healthy, white, shining, and free from scales or dandriff.

But this aspect of mere scurfiness which is assumed by ringworm at its outset, and, as it may so happen, observed by the consultant, may characterize the disease more or less throughout, and is to be then explained by the fact that the fungus grows very languidly in the affected. I shall speak of this chronic state in dealing with the next variation.

Occasionally the practitioner meets with instances apparently of the same scaliness as the above-noted, but in which there is really a certain amount of textured alteration in the hairs. The usual morbid condition which characterises them in the fully developed disease is not a *fait accompli*, but, so to speak, only impending. The hairs over the affected part do not, to an experienced eye, look quite healthy, but they are not so decidedly diseased as in ordinary ringworm. They may not be broken off very short and may be of fair length. They do not stand up from the surface boldly, but often lie irregularly amongst the healthy hairs, and often run in a crooked direction, and on making traction upon a bunch of them with a pair of forceps, they break off more readily than usual, or come away bodily.

In this case the lapse of a certain number of days would have sufficed to develop the typical disease. A *careless* observer is pretty sure to overlook the condition. I lay some little stress upon this stage of ringworm, because I have met with one or two cases in elderly children, adolescent rather, in whom such a condition existed, not as an acute, but as a chronic ailment. Recently I saw a young lady from India, who was brought to me by her mother, who complained that the young lady, about fifteen, had been long troubled with an obstinate patch of scaliness on the top of the head. With a lens I saw what seemed to me to be a patch of seborrhœa, but some of the hairs looked thick and dry, and some came away too readily, and a few broke away. On microscopic examination, the characteristic appearances of a hair invaded by the fungus were discovered, without there being the least particle of doubt as to the nature of the disease. The patient had originally been attacked by ringworm of the head and body two or three years before.

Variation 2 belongs to the chronic or later stage of ringworm. In this, the disease is not made up of well-defined and round, but one or more straggling or irregularly shaped patches, or a large extent of surface involving, indeed, more or less the entire scalp. In such a case, especially after having undergone a good deal of treatment, the diseased surface looks as though it were the seat of chronic

eczema in a healing stage, or a seborrhœa with some general thinning out of the hair. There exists more or less redness and scaliness, and in some parts actual scabbing. It is not until the scalp is very carefully looked at with a lens, or portions of the crust are examined with the microscope, that short, broken-off, or diseased bits of hairs are observed. These, perhaps, are not numerous, and are often concealed by the small scabs and scales, more especially if much soap has been used to the scalp, and has not been thoroughly removed afterwards. Here and there a little pustule may be noticed. It is of consequence to recollect the existence of the two degrees of extensiveness of this phase of ringworm—viz., the localised, and the more or less general form. In the latter (general) the history of the case is distinctly or indistinctly that of ringworm, and the condition submitted to the consultant for his advice, as in the former case, is a change from the typical; but there is not, nor has there been, “discharge” like that of eczema at any time, and the only resemblance in regard to eczema is to its desquamative stage, but the microscopic examination discloses the characteristic minute appearance of tinea. In its more localised form the disease looks like eczema or seborrhœa, but with care the morbidly altered hairs are detected. Errors in diagnosis arise from want of care in the examination of these cases, from lack of good eyesight and the

use of the lens, and from a disregard of the fact that ringworm is often untypical in naked-eye aspects. As I stated, in speaking of Variation 1, such a state of things as an apparent local scurfiness—which is, however, ringworm—may last for a long time as a chronic condition, and I have known the affected child even become and remain for some time the real but unsuspected source, in a school, of the disseminating of the disease to a number of other children, from the belief that it was only suffering from “a little scurfiness.”

An analogous state, but not so pronounced in its characters, is present in those who are believed to be convalescent, so to speak, or to have been cured from ringworm. A recent writer says, “The real difficulty of diagnosis presents itself in chronic cases which may have been under treatment, which may have been apparently cured, and yet which are liable to relapse to an extreme degree in a short time. . . . There may be apparently a good head of hair and no evident mischief whilst a parasiticide is being rubbed in, but in any intermission of treatment a papule may first be noticed, and it and the original malady become evident.” I think, in most of these cases, careless examination is the source of error; for characteristic diseased hairs are to be detected in connexion with a certain amount of scurfiness in these cases. But as the hair is apparently growing well, and not thinned, it is difficult to detect the disease at

times. The experienced eye, however, recognises a want of softness and a degree of dryness about many of the hairs which, on close examination, are found to be, if not bent and twisted and broken off, at least thicker and higher in colour than usual, and certainly more brittle, whilst they are easily extracted from the follicle, and their roots are swollen and sheathless. Oftentimes, if the hair is combed very slowly and gently in the wrong direction, so as to expose the scalp bit by bit, such diseased hairs—frequently shortened considerably—fail to fall down into their natural place with the healthy hair, but stick out irregularly, solitarily, or in groups from the surface, so as to be easily seen. There may be no scurfiness or other indication of disease present in such cases. It is in such cases, too, that diseased hairs lie alongside healthy hairs, and so the more readily escape detection. I shall not fail, in speaking of treatment, to point out the conditions under which alone a head can be regarded as free from disease.

Variation 3 is also a chronic form of ringworm, or rather it is the residue of old-standing disease, supposed to have got well and to have left behind a little pustular eczema. It is made up of little pustules, solitary or in groups of two or three, with a certain amount of redness and scaliness or eczema around, but without at first sight any diseased hairs. If, however, the pustular spots be examined, and the little crusts left by the drying of the pustules be

removed with the forceps, one or two short bits or stumps of hair will be found to have come away with the crusts, or be left in the follicle. I suppose this phase might be called "parasitic sycosis of the scalp." The pustules are evidently attempts to suppurate out bad hairs left behind in the follicles. In the neighbourhood of these pustules a few short broken-off diseased hairs may often be found, and at times emerging from the same follicle as a healthy hair. These gradually, if left undisturbed, may irritate the follicles and cause fresh pustules. These little nests of disease may constitute so many centres of fresh mischief. This variation is met with chiefly in light-haired and delicate children.

Variation 4 consists of little nests of black points occupying the hair follicles, and covering circular areas of varying extent, without any other change, the hair itself having disappeared. These black points are the tops of the broken-off shafts and diseased hairs. They grow slowly, and if the hair-shaft projects sufficiently for it to be seized and extracted, it is found to be loaded with fungus elements. This condition occurs in a very chronic stage of disease, especially in dark-haired children, whose hair is coarse and thick. In reality there is little connexion between the papilla and the hair-shaft, which lies, as it were, as so much dead tissue in the follicle, and upon the disintegrating substance of which, however, the fungus luxuriates.

Variation 5 is what is known as Kerion. This has much the appearance of a threatening abscess, with loss of hair. The disease is made up of a patch or of patches, which are circular, swollen, and so much raised and changed as to resemble a threatening boggy abscess. Each patch is more or less red, tender, feels semi-fluctuant and soft, and in the earlier stage is studded over with little openings, which are the mouths of the hair-follicles, and from each of which a muciform discharge, like the juice of the mistletoe-berry, exudes. Some of the hairs are lost, but many others emerge from these orifices, and can be readily pulled away, and, in fact, they are lying loose in the follicle; others lie loose about the patch. After the early stage, the hair falls of its own accord, and a swollen, red, inflamed, exuding patch is left. If the hairs are examined they will be found to be surrounded and loaded with fungus. The disease is modified by the inflammation of each follicle, and the inflammation detaches the hair from its root-sheath, so that it lies loose in the follicle. This phase of ringworm may be idiopathic—that is, it may arise spontaneously,—when the first thing that attracts serious attention is the falling out of the hair, and the formation *apparently* of an abscess; or it may be a secondary matter—*i.e.*, the result of the application of irritants to ringworm patches; but there is some peculiar susceptibility of the follicle to inflame in the children who are attacked by it,

for the freest intentional use of irritants generally fails to produce it.

CIRCUMSCRIBED BALDNESS.

That is a condition of very common occurrence, consisting of circular spots from which the hair falls, leaving the scalp quite bald on the affected parts, which is commonly regarded as a species of ringworm; but this condition has no relation to ringworm, and is due to defective nutrition. It requires quite different treatment from that of ringworm.

CHAPTER IV.

TINEA CIRCINATA (RINGWORM OF THE BODY).

IT will be convenient to make a few brief observations here, by way of supplement, about ringworm of the body, which so frequently occurs in conjunction with that of the head. The two are identical in their essential nature, with this difference, that there are only a few insignificant hairs present in the former : and hence the patches are not covered over by short, bent, twisted, brittle hairs recognisable by the eye. The mere look of the disease is in this respect different ; the disease, however, from its superficiality, is the more readily curable. The identity of the two things is shown by the fact that when *tinea circinata* travels from non-hairy to hairy parts it assumes the characters of ordinary ringworm of the head ; and, what is of more consequence to be aware of, is the fact—which, however, may be inferred from what has just been said—that ringworm of the head in one subject may be caused by contact with the ringworm on the body of another.

The recognition of body ringworm—consisting, at first, of red scurfy places, which gradually assume

the aspect of red rings made up of ill-defined vesicular or papular raised edges, enclosing pale, scurfy centres, in the scales from which fungus elements can be detected—is never a matter of difficulty in the vast majority of cases ; and I therefore do not enter into this question, nor that of tropical body ringworm. I wish, however, to point out that in some cases, in which body ringworm is extensive, recurrent, and chronic, the state of the bodies of children is, without question, unusually favourable for the development of ringworm, and that the very same general treatment as that advisable in severe ringworm cases is called for to rectify this susceptibility. But, whilst admitting this fact, I believe also that though the profuseness and obstinacy of ringworm may *seem* in other cases to be due to the existence of some general state of the nutrition favourable to parasitic growth, yet they are not so in reality, but are truly the result of the neglect of proper local measures calculated to prevent the reimplantation of the fungus upon the body and its transplantation from part to part. In many cases the fungus elements obtain access to clothes, comforters, and such things, only to be brought continually in contact with the body, as the sources of fresh mischief ; or ringworm, existing in two or three parts of the body, is spread from place to place because of the absence of proper applications, ablutionary measures, and the like. I think

this is proved by the immediate good effects of the careful disinfection of linen and of the body by suitable baths, and the removal or destruction of agents that are likely to convey reinfection, in those cases in which body ringworm is often extensive, recurrent, and chronic, and is not associated with any definite condition of ill-health.

It may be useful to add that in *tinea circinata* contracted from cattle—*e.g.*, horse or calf,—although in some cases it presents ordinary features, yet it is usually more severe in character. The whole patch is swollen and studded over with yellow points which are inflamed follicles, and subsequently decided crusts, so that the aspect of parasitic sycosis has been assumed, and under such circumstances the disease has been mistaken for psoriasis in its earlier stage, and for carbuncle in other cases. The patches generally occur on the arms of those who are called upon to dress cattle affected with ringworm. I have seen it attack various parts of the body, including the face and chin, and in the latter, where a beard has been worn, true sycosis parasitica has resulted. There are usually in these cases typical patches on some part of the surface, or the disease at the outset presents the ordinary features of *tinea circinata*. The severity of the disease is to be ascribed to the special activity in growth and plentifulness of the fungus, which is

very luxuriant, and so causes more irritation than usual. [The actual patches are always circular, and their centrifugal mode of increase, if not actually "ringed" aspect, at once attracts attention and suggests the idea that the disease may be parasitic.

CHAPTER V.

DIAGNOSTIC CONSIDERATIONS.

IN all phases of ringworm of the head, except kerion, the presence, with or without attendant scaliness, of characteristically affected hairs, as I have pointed out in the introductory remarks, is the point to be attended to in the diagnosis of the disease. The mode in which such hairs are best examined has been given in speaking of the fungus. But I have shown in the preceding section that the degree and amount of scaliness and hair change vary very considerably in different cases, especially in very chronic cases. Still the fact remains that, even where there is only slight scaliness or pustulation and apparently no diseased hairs detectible by the unaided eye, on careful and more minute examination evidence of their presence will be discovered.

In making an ordinary non-microscopic examination of a head in

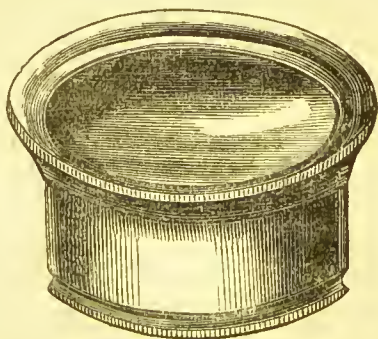


FIG. 3.

ringworm, a lens should always be used. I prefer a

magnifier of a particular kind, which is made for me by Carpenter and Westley, 24, Regent Street. This ringworm glass (see Fig. 3), consists of two plano-convex lenses having their plane surfaces inside, and by this arrangement a high magnifying power with a very flat field is secured.

There are three main sources of mistakes in diagnosis. The first is the neglect of a minute examination in non-typical, ill-developed, and convalescent instances of ringworm; the second is the belief that ringworm is always typical in its aspect, which, of course, paves the way for the neglect of careful observation. The third is, in my opinion, a belief founded on imperfect observation, that ringworm generally leaves behind a certain amount of scurfiness after the real disease is cured. I demur to the truth of this last proposition. If microscopic examination be made in such cases of *apparent scurfiness only*, it will be found that the disease, as evidenced by the presence of diseased hairs and fungus, still exists but not in an active state; though in certain cases, where the scalp has been much inflamed and irritated, simple desquamation may have gone on for a time. Microscopic examination alone can decide this point. For all practical purposes scurfiness should be regarded as indicative of disease still present. It is a question of taking a little trouble to make a proper examination, and, as any mistake on the point is liable to be followed by serious conse

quences, if a child be pronounced well when it is not, such trouble ought to be taken.

As regards the confusion of ringworm with eczema, it is to be remembered that eczema usually affects not only the head but adjoining parts, where its true nature is recognised ; that eczema, although it causes a matting together and, it may be, general thinning of the hair, is never attended by the production of such a morbid, dry, brittle state of the hairs as is found in ringworm. Where diseased hairs are found, even if eczema is also present, the treatment must be that of ringworm.

As regards seborrhœa, the absence in it of all traces of diseased hairs is the sure guide to a correct diagnosis where there is doubt.

Over-treated Ringworm.—There is, lastly, an exceptional state that should be mentioned as liable to be misunderstood, and that is over-treated ringworm. I have had cases of disease brought to me in which undoubted ringworm has existed, but in which the disease has been cured and the surface kept in a state of irritation by the still further and free use of irritating parasitocides. Of course in such instances there is an entire absence of the characteristic features of ringworm, whilst the microscope discloses healthy hair shafts and root sheathes, an absence of fungus and diseased hairs, and the presence only of pus and epithelial débris.

CHAPTER VI.

THE TREATMENT OF RINGWORM.

GENERAL REMARKS.—The degree of curability of ringworm varies greatly in different cases. It depends, in the first place, chiefly upon the age of the disease at the time it first comes under treatment. A vesicant sharply applied at the very beginning of an outbreak of ringworm mostly effectually destroys the disease. But in cases that have become chronic, the state of the constitution has very much to do with the matter. As I have before said, in thin and pallid children, the offspring more especially of delicate and consumptive parents, the disease is very obstinate, and it is in these instances that the beneficial effects of good diet, cod-liver oil, iron, fresh air, and the like, are visible. The avoidance of fat by children who get ringworm is remarkable in my experience, and affords a clue to the nature of the dietetic treatment needed. But further, there are some families in whom the fungus that produces ringworm seems to flourish with unwonted luxuriance, and without there being any very apparent reason, except perhaps the existence of a lymphatic temperament. In these cases, however, much the same internal treatment

as that suggested for the class just referred to does good. But of all aids to the cure of ringworm, none in my estimation equals in value a mother or nurse intelligent enough to comprehend the object of the application of parasiticides, the good sense to carry out orders, and the patience to use the necessary remedies. Ringworm remedies are not properly used in nineteen out of every twenty cases. I always take a good deal of pains to impress upon those who carry out my directions the fact that to cure the disease these remedies must be got to the bottom of the follicles; that it is a very difficult matter to effect this, as the hairs effectually plug the hole into which we want the remedies to penetrate, and that the bottom of the hair-follicle reaches below the true skin itself even. Such an explanation does certainly make a good impression, and sets mothers or nurses to work in earnest. I have already called attention to these points, but it will be useful to restate them thus generally here.

PRELIMINARY MEASURES.—Before the actual treatment of ringworm is commenced, there are certain preliminary steps of much importance to be noted. First of all, the extent of disease must be accurately ascertained, and measures taken for preventing the spread of the disease from one to other parts of the scalp, by the removal of the hair. Suppose the disease is recent, and there is only *one* patch, it will not be necessary to cut the hair off the

scalp, because the patch can be sufficiently isolated by clipping the hair away for a distance of an inch or so beyond the edge of the actual diseased area; but if the ringworm has lasted some time, or there be other spots, however small, here and there about the scalp, the hair should be removed from the whole scalp. This is a disagreeable step to take, one against which mothers protest, but under the circumstances stated I am convinced it is a right one to insist upon, and should not be relinquished. There are two cogent reasons for the removal of the hair. Whilst it remains on the scalp—firstly, it is impossible to determine with certainty what is the real extent of the ringworm; and, secondly, it is most likely that the disease will spring up in the parts covered by hair unobserved, and so form fresh foci, whence the disease may spread elsewhere. When the hair is off, the mere ablutions used will suffice to prevent the sowing of the conidia of the *tinea* fungus upon healthy parts. After the removal of the hair, the diseased surface will be recognised by its duller and greyish hue, its scaliness, and the dryness and lighter colour of the hair. The hair should be kept closely cut every two or three days, the scalp being carefully clipped with short scissors or shaved. I have no objection to shaving beyond this, that if the scalp is excoriated by bad shaving, it becomes unusually sensitive to remedies, and thus prevents them from being used as vigorously as is desirable in severe and extensive cases.

The question of cleansing the scalp may be referred to, as some difference of opinion exists about it. I direct the head to be washed with soap and water once a day. Of course a linen cap, with an extra velvet skull-cap, should be worn when the hair is cut; the latter, however, may be of any kind that fancy dictates, but it should be worn over a linen cap, which can be frequently scalded and cleansed.

GENERAL REMEDIES.—I have referred to these sufficiently in Chapter III. p. 14 *et seq.*

LOCAL REMEDIES.—I come now to the local treatment, and shall have nothing to say of ringworm of the non-hairy parts, because that is readily cured by any parasiticide, as the disease is superficial.

At the onset of these remarks I referred to the necessity of rooting out every diseased hair. Now, in cases of kerion, the fifth clinical phase of ringworm to which I alluded, Nature readily effects this very thing by the peculiar follicular inflammation which occurs, and as a consequence of which each hair is found to have become loosened away from the follicular sheath and to be lying loose in the follicle. This kerion occurs idiopathically, but it is also caused among the poor by the use of "a popular remedy"—an ointment, as the poor say, "which I got from the chemist's." The ointment is the nitrate of mercury. Its action is to inflame each follicle, and the patch of ringworm becomes

swollen, boggy, and as though about to suppurate. The hair lies loose in the follicle, and only requires to be taken away to effect a cure. The rest of the treatment consists in the use of mild astringents externally whilst the new hairs spring up gradually. Kerion, in fact, cures itself.

Now, I have tried to imitate this process, but I confess that I have rarely succeeded, even with the very best and freshest ointment made expressly for me. It is possible the rancid and old kind might be more successful, but as yet I have got no good result. It occurred to me that if I could excite suppuration of the follicles by some ointment, I should get the diseased hairs away rapidly, which would be preferable to getting rid of them bit by bit, and rubbing in parasitocides for weeks and months. I have not tried tartar emetic, but croton oil, oleate of mercury, and other things, though not with the results I wished to obtain. I think, however, this is a point worth attention.

Of course in very recent cases of ordinary character a good blistering cures the disease, and may be had recourse to unless there be any very special objection. The ordinary blistering fluid or glacial acetic acid may be cautiously used, followed by a wet compress. An almost equally good remedy is Coster's paste, made by adding two drachms of iodine to one ounce of colourless oil of tar, a preparation of which good samples are difficult to

obtain.* This is painted over the spot on two or three several occasions at intervals of three or four days; sufficient time must be allowed to elapse between each application, in order that the scabs which form may be removed. Strong acetic acid is preferred by some, but whatever be employed, the important thing is to go over the surface after the blister has healed somewhat, and extract all diseased hairs, some of which will come away attached to the scabs.

In these more recent cases, and especially in such as I have described under Variation 1, one or two sharp blisterings, followed by the free use of a parasiticide ointment, of which I will mention particulars by-and-by, cure the disease. The chronic cases always give trouble.

In order to clear the ground so as to leave the way open to deal, specially and at length, with ordinary cases of chronic ringworm, I will refer at once to the *third* phase or variation of the disease, which I stated consists in the presence of little crops of pustules seated here and there, and having in their centres diseased hairs. In this phase all scabs should be removed, but by the practitioner himself, who should search for diseased hairs in the site of

* There are many things sold as Coster's paste which are quite useless. I can commend that made by Mr. Martindale, of New Cavendish Street, W.

the pustules and extract them. The diseased hairs must be got away one by one, and the places treated with the ordinary white precipitate, or nitrate of mercury, or iodide of sulphur ointment, well rubbed in night and morning. If the diseased hairs are not extracted entire, it is a good plan to drop into the containing follicle a small quantity of blistering fluid. The affected follicles must be watched carefully, till all traces of bad hairs have been exterminated by repeated extraction and free infriiction of parasitical remedies. The hunt for diseased hairs is a tedious affair, but it should be done if a good result is to be obtained.

In Variation 4 the infriiction of some semi-vesicating parasiticide is needed, such as croton oil or strong acetic acid ointment, and an occasional blistering to hasten the loosening and expulsion of the more or less dead hairs; a process which is to be assisted by epilation.

Now as regards cases of chronic ringworm, which form the bulk of those for which treatment is sought. These are such as need the preparatory measures before spoken of to be adopted in their fullest sense. All scabs and scales, if present, must be removed by washing or by soaking the scalp freely for several hours at a time in sulphurous acid lotion, one part to four or six of water, after the hair has been removed. The next step consists in using remedies to directly destroy the parasite. Most authorities advise freely

blistering the diseased surface, but not over too great an extent.

If the disease covers a wide area, blistering is out of the question; it is then best to blister one or two of the worst spots, or bits only at short intervals. Besides, the sensitiveness of children varies greatly, and some bear blistering badly. I am not a strong advocate for blistering; indeed, I very seldom employ it; but I am bound to describe its use. There is a great choice of vesicants, and I need only refer to four of these remedies: Bullen and Burt's blistering fluid, glacial acetic acid, the perchloride of mercury solution (twenty grains or more to an ounce of spirit), and Coster's paste. For small but decided spots of disease the perchloride solution is good; for large patches perhaps Bullen and Burt's blistering fluid is better. It is absolutely necessary to avoid untoward occurrences that none but medical men should use these potent remedies. Suppose then a portion of diseased surface be blistered, what is the next step? To wait until the scabs begin to form, soothing the blistered part immediately after the application of the vesicant with poulticing, or the use of cold compresses if need be. When the scabs begin to form, the sooner they are removed the better, by soaking the part in oil or by poulticing, plenty of grease being applied to the scabbed surface before the poultices. As the scabbing loosens, the pieces of scab are to be pulled or gently picked away, and then an attempt be made to get

away as many of the diseased hairs as possible. In fact, the object of removing the scabs as speedily as possible is to get at the hairs, which have become more or less loosened in many cases by the inflammation, but which will be extracted with more difficulty if the parts are allowed to remain undisturbed for a longer time, whether blistering be employed or not. To this matter of epilation I must devote a special section.

EPILATION.—This process of removing the hairs artificially by means of forceps specially adapted for the purpose is an important one, and its adoption is followed by good results. The forceps which I use are ordinary ciliary forceps with rounded blades, as shown in the Figure.* When the diseased hairs are



FIG. 4.

plentiful, several hairs may be extracted at a time ; but in chronic cases they may be taken out singly. The hairs should be pulled away in the direction of their normal direction of growth, but not with any jerky motion, but with gentle traction. The points of the forceps must be constantly cleaned. I usually catch the edge of a piece of blotting-paper between

* I get mine from Mayer and Meltzer, in Great Portland Street.

the points, and wipe the latter by pulling the forceps away. Those in charge of the affected should be instructed to epilate over the space of one or two inches a day until the whole area of the diseased surface has been freed as much as is possible from hairs. The application to kill the parasite should be made directly after epilation. A repetition of the epilation is to be made over the spots first operated upon as soon as possible, which indeed are to be epilated over and over again so long as diseased hairs make their appearance. This epilation, whether used in conjunction with blistering or not, is a thing we practitioners shirk. Medical men ought to do it themselves, if they have time, which, however, is seldom the case; and if not, to carefully instruct some one to undertake it for them; and in that case the nurse or mother should be set to work for at least an hour each day—unless the child be too sensitive or upset by it—to the business of epilation, so as to give the diseased hairs “no quarter.” Some writers deprecate the practice of epilation in every possible way. It is because they have not fully and fairly practised it, or because it is a trouble to follow it. It is perfectly true that it is difficult to epilate effectually in some cases, and that very many hairs break away at the shaft, leaving the root part behind; but, nevertheless, a certain amount of bad hair is removed by the process of epilation, and this permits the parasiticides to act more effectually. Many bad hairs do, however, come

away bodily. But during the intervals between the several blisterings of a particular spot, something else must be done. After the scabs have been removed, and until a few days more have elapsed, the blistering fluid cannot well be reapplied, because it would irritate too much. During this interval, then, it is a good plan to apply some tarry compound. I prefer the *huile de eade* (pyroligneous oil of juniper) with sulphur, in the proportion of three drachms of the latter to three drachms of the *huile de eade* and one ounce of lard. The tars have some influence in loosening the hairs in the follicles, or, at least, of facilitating epilation. Thus free infriktion of remedies and epilation are recommended to be used together. If Coster's paste is used, it is to be reapplied every five or six days, the old paste, which has caked on, being removed as speedily as possible by the aid of greasing, picking, and free washing with soap and water; then epilation is to follow, before reapplying the remedy.

Epilation is still to be practised in connexion with the use of lotions and ointment of a less irritating kind, and which, at the same time, tend to destroy the fungus.

For my own part, I do not employ blistering so freely as others. I think that it is quite inadmissible in delicate, sensitive children in whom ringworm is severe; but it is very effective in cutting short the disease, in arresting the development of disease, or

new spots as they crop up in already affected heads, and, not needing much, if any, repetition, does not "punish" the affected; and that in extensive cases, in whatever subject, it causes too much distress to be freely available in private practice; but that if the disease is limited to one or two spots, or particular spots become very obstinate and rebellious, to such it may with advantage be employed.

Disinfection.—All things that have been in immediate contact with ringworm surface should, if possible, be destroyed or disinfected, lest they convey the disease to others; but I will speak more fully of this under the head of "Preventive Measures" further on.

Parasiticide.—The use of parasiticides (or the remedies destructive of the fungus) must always be a vigorous one. There are specifics in abundance for ringworm, from ink to Goa or gunpowder; but it must be remembered that it is an easy matter to obtain a cure in mild and slight cases with a multitude of remedies, which all alike fail in severe and chronic cases.

The cure of ringworm in chief measure depends upon the pertinacity with which remedies are handled. The practitioner does not apply them himself, and consequently in very many instances they are just dabbed on in the most superficial manner. I direct them to be well rubbed in for at least twenty minutes night and morning, and, if possible, with an old tooth-brush or a swab of flannel. The number of parasiticides is legion. Medical men usually have

their favourites. I give the composition of my favourites; but these must all be used with proper judgment and care, and when a large area of the scalp is diseased milder remedies should be used, to avoid all chance of evil consequences of absorption from their application over too extensive a surface. The following is one I like:—Sulphate of copper, ten to twenty grains; oil of cade (ol. junip. pyrolig.), three drachms; sulphur, three drachms; ammonio-chloride of mercury, five to twenty grains; lard, one ounce: to be well mixed together. If this be found to cause much irritation, it may be reduced in strength by the addition of a larger quantity of lard. Another prescription, which is useful in cases of very irritable scalp, is the following: Oil of cade, sulphur, and tincture of iodine, of each three drachms; carbolic acid, twenty to forty grains; lard, one ounce. I add a third—a lotion—one I believe in common use at the Foundling Hospital and some other public places:—Perchloride of mercury, two to six grains; tincture of cantharides, half an ounce; strong nitric acid, one drachm; distilled water to six ounces. Where it is desirable to avoid a mess, the lotion will be of course preferable to the two unguents above described.

GOA POWDER AND CHRYSOPHANIC ACID.—These two remedies are much in fashion just now. I have used them fully and fairly. They are good remedies, but not the best. Frequently I think the

efficacious results supposed to be due to their operation, are in reality caused by other remedies used with them, such as acetic acid. In ringworm of the surface they are very serviceable; but I do not prefer them to other remedies for ringworm in hairy parts; in fact, they are in my experience not to be compared in potency to most of the other remedies of long established use. Goa powder has one great drawback, that when used freely to the scalp it by absorption leads to most unsightly discoloration and swelling of the face and forehead.

Now, in using these and other parasiticides, the object I have in view is to cause just as much irritation as will lead to almost or even slight suppuration of the follicles, inasmuch as this contributes to the loosening of the hairs therein, and is the test of the penetration of the remedies within the follicles towards the more deeply-seated parasite. If these remedies do not induce any irritation, I very frequently rub for a few times on the scalp an ointment containing from two to four grains of perchloride of mercury with a drachm of acetic acid to an ounce of lard, where this and such-like medicaments can be borne without excessive discomfort. I would again add that more depends upon a persevering and effective application than the nature and character of remedies in the treatment of ringworm.

The Cure.—Then comes the all-important question—*When is the disease well, and when may the remedies be*

discontinued? A diseased hair never recovers itself. To believe and act upon this, although it may not be an absolute fact, is the safest policy. Hence diminution in the number of diseased hairs and in their rate of growth is the only true proof of the disease getting better, and the total disappearance of the diseased hairs is alone the proof of cure. By this I mean the total disappearance of every black stumpy portion of hair, for oftentimes the only evidence of disease in cases verging on cure is the presence of small stumpy bits of hair in the follicles. When the bad hairs have vanished, and whilst they are vanishing, new silky, downy hairs of course begin to spring up, and when these entirely cover the hitherto diseased spot the malady may be pronounced well. *In other words, when a formerly diseased patch is covered over with fine, downy, new hairs, and all vestiges of the texturally altered ones have disappeared, then a cure may be pronounced, and then only; and this point can only be determined by accurate and minute examination by a lens or the microscope.*

Cessation of Infection.—And it is only under similar circumstances that a child can be pronounced to be incapable of conveying the disease by contagion. If I am called upon to decide whether a child is contagious as regards ringworm or convalescent from it, I decide entirely by the presence or absence of short broken-off hairs, or dark, thick, stumpy remains of hair shafts in the follicles, as seen by a powerful lens.

If there are any of the latter I always consider the patient is not well, and that he bears about him a contagious disorder. This is the only safe course to avoid relapses, and to prevent parents and others from being seriously disappointed. I should have said that in very chronic cases the scalp becomes very insensible to remedies from their long-continued application, and that in that case parasiticides must be used of increasing potency.

After-baldness.—After ringworm the growth of the hair often remains a weak one for awhile. In such a case the practitioner is asked for, or himself suggests, a remedy. Nothing is better than a mild, stimulating, cantharadine wash, applied with plenty of gentle friction, followed by a free brushing, so as to stimulate the scalp gently. One of the most effective applications I know is composed as follows:—Tincture of nux vomica, distilled vinegar, tincture of capsicum, tincture of lytta, spirit of rosemary, and rose-water. A most elegant and pleasant lotion is made by the addition of a little honey-water and some pleasant scent; and by careful mixing and filtration, to which Mr. R. Curtis a short time since drew my attention. The lotion is an excellent one for general use to the hair; it is also a very effective one. The number of hair preparations is legion, and quackery is rampant in regard to them, but with this matter I can of course have nothing to say or do.

CHAPTER VII.

PREVENTIVE AND DISINFECTING MEASURES.

I HAVE yet to speak of the means which should be adopted to limit the spread of ringworm from one to another part of the same body, and also from infected to healthy subjects.

Absolute *cleanliness*, including free soap-and-water washing once or twice a day, and the *removal of the hair* from the affected parts, I have already insisted upon.

Isolation of the affected must be complete. I never admit of any compromise on this point.

Visitors.—Parents should be particular that they do not receive as visitors into their houses other people's children affected by ringworm, nor previously infected children until it is perfectly clear that they are really cured. I should also advise parents to have their children's heads carefully examined when they come home for the holidays.

Media capable of conveying the germs of disease from person to person, such as towels, brushes, combs, comforters, caps, hats, bed-linen even, and woollen clothes that come in contact with affected parts or regions, must not be used in common by the

infected and the healthy. If they are not destroyed they must be repeatedly cleansed when in use by the infected. The linen caps worn next the skin may be boiled and washed from time to time in carbolic water. Linen worn next the skin by the infected in body-ringworm must not be sent to the same laundry as that of the healthy, but should be *boiled*, with or without carbolic acid, and washed separately.

The state of the body or scalp itself is of importance. *Baths* with hyposulphite of soda or hepar-sulphuris, may be given twice a week to children affected with ringworm to any extent, but not to the exclusion of soap-and-water applications. I believe that the presence of greasy *applications*, even in the shape of pomade, is of use in preventing infection. This is not generally believed or acted upon. A dry state of scalp is favourable, and a greasy state of scalp is not favourable, to infection; hence I order greasy substances to be applied to all healthy heads likely or liable to be affected, twice a week at least. The following is a good and useful form:—Five grains of nitrous oxide and five grains of the ammonia-chloride of mercury, with some scent and an ounce of lard, to be used as a pomade. The heads of the healthy must be washed at least once a week, and when the pomade is not used or is objected to, a lotion containing strong acetic acid, glycerine, carbolic acid, or a little salicylic acid and rose-water may be used.

CHAPTER VIII.

RINGWORM IN SCHOOLS AND PUBLIC INSTITUTIONS.

THE importance of preventing the outbreak of ringworm in public institutions need not here be dwelt upon. Supposing a school is free from the disease, what are the best precautions to be adopted to prevent its development therein? In the first place it is necessary that a regular examination of the heads and bodies of children should be made, to detect scurfy places in the former, and red, itching, scaly circular patches in the latter situations, especially about the neck and the face. This examination must necessarily be of a domestic character, and should any suspicious places be discovered, of course the attention of the medical man should be at once called to them, in order that an exact diagnosis may be made, and any ringworm at once checked; a comparatively easy matter at the first outbreak of the disease.

There is a particular time at which this examination is very necessary, and that is on the return of children to school after absence on their holidays; for it not unusually happens that children become

infected with ringworm by their friends and play-mates at home, and on their return to school convey the disease to their schoolfellows. Next to this, the practice of carefully washing the heads, and the strict observance of "bath night," are great preventives. Further, the observance of cleanliness with regard to brushes and combs, and the enforcement of the rule that these things should not be used in common by a number of children, are not unimportant considerations. And with reference to this subject the hint may be thrown out that it is safer that hair-cutting operations should be conducted in the school itself rather than outside, in order to avoid the risk of any chance infection. The regular use of some mild detergent hair-wash or pomade, so as to keep the scalp in a healthy condition, is also desirable.

When the disease has actually broken out the general treatment of individual cases is, of course, the same in schools as in private, and this has already been observed; but the adoption of the precautionary measures summarised in the preceding section is of tenfold more importance. (1) The first thing to be done is to institute a regular, minute, and careful medical examination of all heads, to detect the earliest and slightest trace of disease, and to at once completely isolate the infected if not sent away, and to let them have a separate attendant, and towels, brushes, &c. This isolation is the more necessary as it is probable that where large numbers

of cases occur, the air is the medium of the dissemination of fungus particles given off from infected heads, from the diseased to the healthy, as I have elsewhere shown. (2) The school generally must be placed under the best hygienic influences, especially in the way of careful ventilation; the general health state of the children must be examined, and the diet improved if need be. The children must not be given too limited a space to live in, nor too much confined in-doors. The ablutionary measures, the regular greasing of the heads of the healthy with parasiticide applications, and other matters above referred to, must be enforced with the utmost precision.

But very important to my mind in large institutions is the adoption of separate laundry arrangements for the healthy and the infected, and the careful disinfection of the clothes of the latter.

THE END.



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